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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,497	07/21/2003	Joseph T. Lindgren	M4065.0667/P667	4997
24998	7590	08/09/2005	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			NOVACEK, CHRISTY L	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			2822	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,497

Applicant(s)

LINDGREN, JOSEPH T.

Examiner

Christy L. Novacek

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2005 and 24 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-15 and 17-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 11-15, 17-21 and 29-36 is/are allowed.
- 6) ☒ Claim(s) 22, 23, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 24, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendments filed May 6, 2005 and May 24, 2005.

Drawings

The replacement drawings were received on May 24, 2005. These drawings are approved.

Response to Amendment

The amendment to claim 3 is sufficient to overcome the objection to claim 3 stated in the previous office action. Therefore, this objection is withdrawn.

The amendment of claim 1 is sufficient to overcome the rejection of claims 5, 6 and 9 under 35 U.S.C. 112, second paragraph stated in the previous office action. The amendment of claims 27 and 28 is sufficient to overcome the rejection of claims 27 and 28 under 35 U.S.C. 112, second paragraph. The amendment of claim 35 is sufficient to overcome the rejection of claim 35 under 35 U.S.C. 112, second paragraph. Therefore, these rejections are withdrawn.

The limitations added to claim 1 are sufficient to overcome the rejection of claims 1, 4, 5, 7, 9 under 35 U.S.C. 102(e) as being anticipated by Drewery (US 6,774,039). The limitations added to claims 1, 15 and 22 are sufficient to overcome the rejections of claims 1-3, 6, 8, 9, 15, 22-24 and 26 under 35 U.S.C. 103(a) as being unpatentable over Nagao et al. (US 6,764,879) in view of Drewery.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 22, 23, 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Drewery (US 6,774,039, previously cited).

Regarding claim 22, Drewery discloses a plurality of dice (202), each of which has a plurality of first platable features (400), and a plurality of second platable features (900), wherein each first platable feature is conductively connected to more than one second platable feature, and each second platable feature is electrically connected to more than one first platable feature (Fig. 10-12; col. 6, ln. 14 – col. 7, ln. 12; col. 8, ln. 6-24).

Regarding claim 23, Drewery discloses that the second platable feature assists in plating the first platable feature (col. 7, ln. 2-5).

Regarding claim 25, Drewery discloses that the second platable feature is connected to the plurality of dice (Fig. 2A-2B; col. 5, ln. 62 – col. 6, ln. 13).

Regarding claim 27, Drewery discloses that the second platable feature is made of conductive copper. For this reason, it appears that the second platable feature is inherently electrolessly platable (i.e., *capable* of being electrolessly plated).

Response to Arguments

Applicant's arguments filed May 6, 2005 have been fully considered.

Regarding the rejection of claim 22 as being anticipated by Drewery, Applicant argues that Drewery allegedly fails to disclose that each first platable feature is conductively connected to more than one second platable feature and each second platable feature is electrically connected to more than one first platable feature. Drewery teaches forming conductively connected bus lines (second platable features) that border each edge of each die on the wafer (Fig. 2B) and forming metallization (first platable features) that are electrically connected to the

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bus lines. Figure 11 shows that the second platable feature is electrically connected to more than one first platable feature. Additionally, Drewery teaches, "At each metallization level of the process flow, good electrical contact must be made to the copper bus bars. This is because the copper bus bars will provide current flow to the die when electroplating to fill subsequently formed features." (col. 7, ln. 1-5). Therefore, Drewery discloses that each bus bar is connected to more than one platable metallization feature and each platable metallization feature is connected to the bus bars on each edge of the die.

Allowable Subject Matter

Claims 1-9, 11-15, 17-21 and 29-36 are allowed.

The primary reasons for the allowance of claims 1-9, 11-15, 17-21 and 29-36 were stated in the previous office action.

Claims 24, 26 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for the indication of the allowable subject matter of claim 24 is the inclusion therein, in combination as currently claimed, of the limitations of forming second platable features and first platable features such that each second platable feature is connected to multiple first platable features and each first platable feature is connected to multiple second platable features and the second platable feature assists in plating the first platable features, as well as functions as a probe point for testing. These limitations are found in claim 24 and are neither disclosed nor taught by the prior art of record, alone or in combination.

The primary reason for the indication of the allowable subject matter of claim 26 is the inclusion therein, in combination as currently claimed, of the limitation forming second platable features and first platable features such that each second platable feature is connected to multiple first platable features and each first platable feature is connected to multiple second platable features and each second platable feature is a sacrificial platable feature. This limitation is found in claim 26 and is neither disclosed nor taught by the prior art of record, alone or in combination.

The primary reason for the indication of the allowable subject matter of claim 28 is the inclusion therein, in combination as currently claimed, of the limitation of forming second platable features and first platable features such that each second platable feature is connected to multiple first platable features and each first platable feature is connected to multiple second platable features and the platable features are plated in a bath of nickel salt, hypophosphite salt, stabilizer and an organic acid or chelating agent. This limitation is found in claim 28 and is neither disclosed nor taught by the prior art of record, alone or in combination.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christy L. Novacek whose telephone number is (571) 272-1839. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLN
August 8, 2005



Michael Trinh
Primary Examiner
Act S P E

Approved CX 8/8/05

App No.: 10/622,497

Docket No.: M4065.0667/P667

Inventor: Joseph T. Lindgren

Title: STABLE ELECTROLESS FINE PITCH INTERCONNECT

PLATING

REPLACEMENT SHEET

Sheet 1 of 3

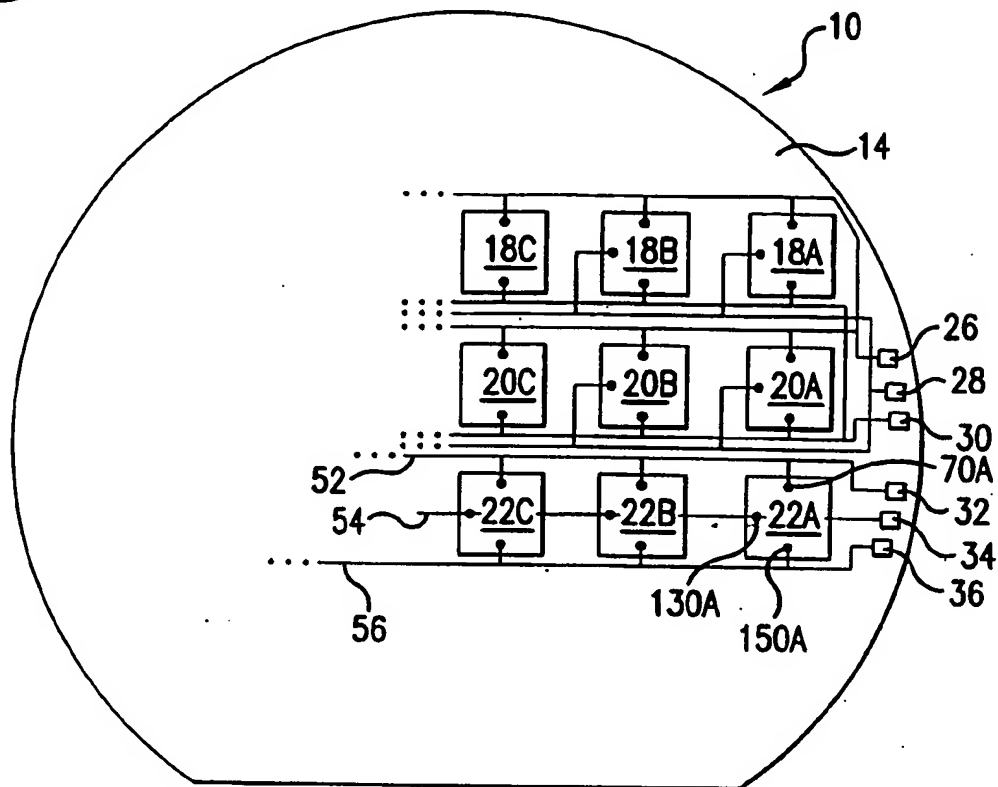
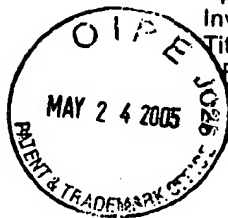


FIG. 1

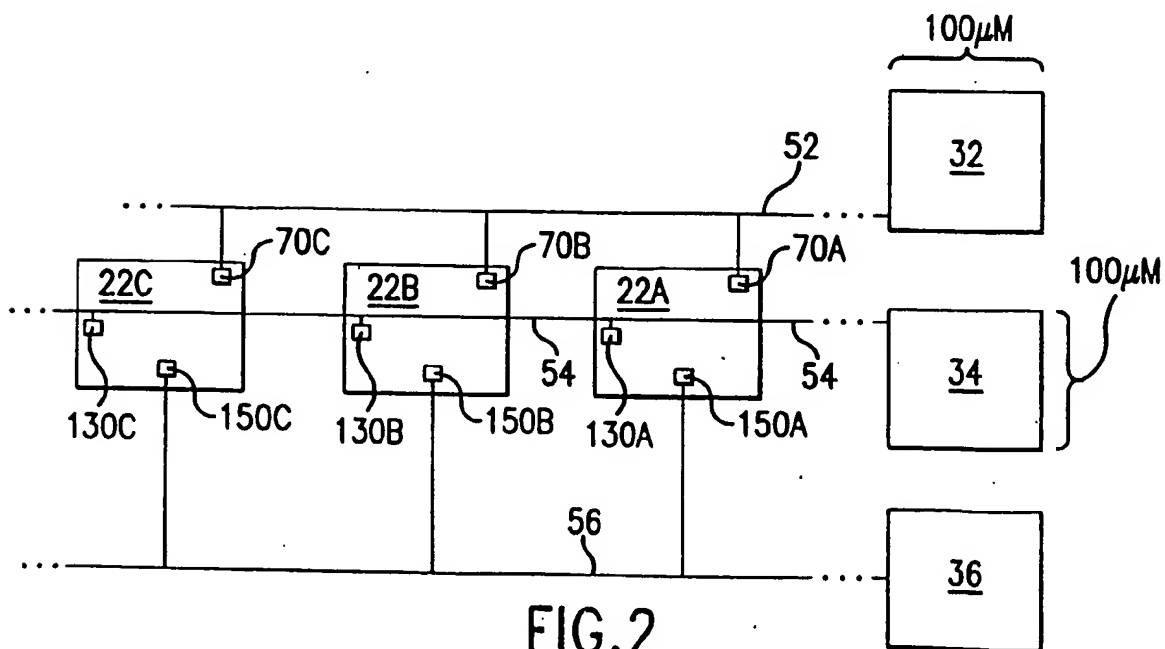


FIG. 2